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Flora, No. 19. Professor Julius Klein, Notes on Algæ, continued. No. 21. Arnold, The Mosses of the Jura. Dr. Prantl, On *Hysterium Pinastri* Schr. as a Cause of Leaf Disease in the Pine. No. 22. Dr. A. Minks, The Lichen Question.

Botanische Zeitung, No. 30. De Borbás, Concerning some Iridaceæ, especially those of Hungary. Warnstorf, Two New European Musci. Reports of Societies. No. 31. Dr. Harz, On the Origin and Properties of Spergulin (a new fluorescent from the seed-coats of *Spergula vulgaris*).

ZOOLOGY.¹

DEVELOPMENT OF UNFERTILIZED EGGS OF VERTEBRATES AND MOLLUSCA.—In the August number of the *NATURALIST* I notice a letter from Mr. E. Lewis Sturtevant on the development of unfertilized eggs in the body of the female pickerel, and as the subject is one of great interest, I subjoin a few extracts from my notes, which relate to similar observations.

Dr. Burnett says (Proc. Amer. Acad. of Arts and Sciences, iii., 1847, page 44), "In the ova of the common cod-fish (*Gadus morrhua*) before they are expelled from the ovaries, and therefore before impregnation, I have seen phenomena indicating that the segmentation of the vitellus had already commenced." Professor Agassiz says (Proc. Boston Soc. Nat. Hist., vi., 1856, page 9) that eggs in various early stages of development may be found in the ovaries of the cod, whiting, and hake; but he opposes Burnett's view that this is to be regarded as proof of parthenogenesis, and holds that it rather proves copulation and internal impregnation. According to Bischoff (Mém. sur la Maturation et la Chute périodique de l'Œuf de l'Homme et des Mammifères, indépendant de la Fécondation, Ann. d. Sc. Nat., iii., ser. zool. ii., page 135, 1844) a few of the eggs laid by a female frog which had been kept in solitary confinement are found to go through the early stages of development.

In the *Monthly Microscopical Journal* for July, 1876 (page 44), there is a notice of similar observations upon the frog, which were communicated to the Académie des Sciences. According to this observer the first stages of segmentation were found in some of the eggs dropped by a female frog which had been kept in confinement for about four months, and secluded from all possible intercourse with the male. Segmentation was more rapid and irregular than in fertilized eggs at the same temperature. Only a small number of eggs commenced development; the majority died at once, and the rest very soon and before the mulberry stage was reached. The same phenomenon has also been seen by Leuchart.

Oebacher finds that the eggs laid by virgin hens, which have been reared in confinement, undergo segmentation and form a blastoderm

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while in the oviduct. In the case of the hen this does not seem to be exceptional but normal, as it appears to occur in nearly every case; and Oebacher concludes from his observations upon the subject (*Die Veränderungen des unbefruchteten Keimes des Hühnereier im eileiter und bei Bebrütungsversuchen*, *Zeitschr. f. Wiss. zool.*, xxii., 1872, page 220): "We may therefore state confidently that the hen's egg goes through the process of segmentation during the intrametral period, whether it is fecundated or not, and we must therefore regard it as brought about by the organization of the egg itself, and not as caused by the influence of the male fluid."

Bischoff has found eggs in various stages of segmentation in the ovaries of a virgin sow which had been carefully separated from the male during life, and Hensen has made similar observations upon the rabbit. According to Vogt (*Bilder aus dem Thierleben*, page 217) the unfertilized eggs of *Firola* undergo segmentation; and Quatrefages records the same thing in *Unio* (*Compt. Rend.*, 1849, page 101). In the *Niades* the eggs are certainly discharged from the ovaries before impregnation takes place, although it is of course possible that some of the spermatic fluid may gain access to the oviduct. As the cilia of this duct are so placed as to cause an outward current this is hardly probable, and I have found and figured segmented eggs in the follicles of the ovary of *Anodonta*. These eggs were taken from the ovary a few days after the brood for that year had passed into the gills; and they were fully grown and ripe, and were very plainly the remnants of the brood of that season, which from some cause had failed to escape into the oviduct and pass into the gills. They did not differ in any particular from fertilized eggs at the same stage of development.

These cases are by no means all which might be collected to show that in groups of animals in which parthenogenesis does not occur, the eggs have still the power to go through part of the process of development without fertilization, and I believe, from conversations with fishermen and fish-breeders, that among fishes this is by no means rare. As parthenogenesis is normal among many of the lower animals, and since traces of the same power are thus found among the higher vertebrates, I think that we must conclude that the egg has in itself the power to form a new individual, although this power is never perfectly, and usually not at all, shown until development is excited by the influence of the spermatic filaments of the male. — W. K. BROOKS.

A BLACK RATTLESNAKE. — While exploring the cañon of Alameda Creek, about one mile and a half beyond Niles Station, California, one of the civil engineers of the Central Pacific Railroad Company, on the 30th of July, came across a rattlesnake as black as jet, without even a white shade on the belly. The snake had ten rattles, and was three feet in length. Rattlesnakes are not uncommon in this part of the State, and are sometimes killed in Strawberry Cañon, near the university at Berkeley. — R. E. C. S.

NORTHERN RANGE OF THE BISON. — Mr. E. W. Nelson, the well-known ornithologist, now in charge of one of the government meteorological stations in Alaska, writes me as follows under date of St. Michael's, Alaska, July 11, 1877: "I have met here two gentlemen who crossed the mountains from British Columbia and came to Fort Yukon through British America, from whom I have derived some information about the buffalo (*Bison Americanus*) which will be of interest to you. These gentlemen descended the Peace River, and on about the one hundred and eighteenth degree of longitude made a portage to Hay River, directly north. On this portage they saw thousands of buffalo skulls, and old trails, in some instances two or three feet deep, leading east and west. They wintered on Hay River, near its entrance into Great Slave Lake, and here found the buffalo still common, occupying a restricted territory along the southern border of the lake. This was in 1871. They made inquiry concerning the large number of skulls seen by them on the portage, and learned that about fifty years before snow fell to the estimated depth of fourteen feet, and so enveloped the animals that they perished by thousands. It is asserted that these buffaloes are larger than those of the plains." This is confirmatory of the statements I have elsewhere given of the comparatively recent presence of the bison near Great Slave Lake and on Peace and Hay rivers. — J. A. ALLEN.

ANTHROPOLOGY.

ANTHROPOLOGICAL NEWS. — Two very important contributions to American ethnology have just been issued from Major Powell's office. One is entitled Introduction to the Study of Indian Languages, with Words, Phrases, and Sentences to be collected, by J. W. Powell. The paper is to be one of the chapters of a Manual of North American Ethnography, which Major Powell will shortly publish with the aid of eminent specialists. The other work is volume i. of Contributions to North American Ethnology, issued by the Interior Department. Part I. of this volume contains On the Distribution and Nomenclature of the Native Tribes of Alaska and the Adjacent Territory, by W. H. Dall. On a Succession of Shell-Heaps on the Aleutian Islands, by the same. Remarks on the Origin of the Innuits, by the same. Appendix to Part I. contains Notes on the Natives of Alaska, by J. Furnhelm. Terms of Relationship used by the Innuits, by W. H. Dall. Comparative Vocabularies, by George Gibbs and W. H. Dall. Part II. embraces a paper on the Tribes of Western Washington Territory and Northwestern Oregon, with Maps, by G. Gibbs. The appendix to Part II. contains Comparative Vocabularies, by Messrs. Gibbs, Tolmie, and Mengarini; Niskwalli-English Dictionary and English-Niskwalli Dictionary, by G. Gibbs.

The Davenport Academy of Natural Sciences has issued Part I. of